

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A processor-implemented method for designing a ring cover candidate for a network, comprising:

receiving, at the processor, network configuration information and traffic demand information for the network; and

generating, by the processor, the ring cover candidate, including a plurality of rings, based on the network configuration information and the traffic demand information, each of the rings including a plurality of network spans, where the generating the ring cover candidate includes generating a plurality of ring cover candidates by using a different process to generate each of the ring cover candidates.

2. (original) The processor-implemented method of claim 1, further comprising

generating and outputting at least one report describing characteristics of the ring cover candidate.

3. (currently amended) The processor-implemented method of claim 1, where ~~wherein~~ the generating the ring cover candidate comprises creating a spanning tree from a plurality of loaded spans of the network.

4. (currently amended) The processor-implemented method of claim 3, where
~~wherein~~ the generating the ring cover candidate further comprises:
adding one or more chords to the spanning tree to create a plurality of first rings;
generating a plurality of second rings by combining two of the plurality of first
rings; and
generating a plurality of third rings by combining one of the second rings with
one of the first rings.

5. (currently amended) The processor-implemented method of claim 4, where
~~wherein~~ the generating a plurality of third rings comprises generating derived third
degree rings and focused third degree rings.

6. (currently amended) The processor-implemented method of claim 4, where
~~wherein~~ at least some of the third rings and the second rings are based on an invalid first
ring.

7. (original) The processor-implemented method of claim 4, further comprising
storing information regarding the first rings, the second rings and the third rings in span-
linked lists associated with respective ones of a plurality of network spans covered by the
first rings, the second rings and the third rings.

8. (currently amended) The processor-implemented method of claim 1, ~~wherein the~~
~~generating the ring cover candidate comprises generating a plurality of ring cover~~
~~candidates~~, the generating the plurality of ring cover candidates comprising:

generating a first ring cover candidate by using cheapest ones of the rings
formed on loaded network spans,

generating a second ring cover candidate by using cheapest ones of the
rings formed on a maximum number of uncovered network spans, and

generating a third ring cover candidate by using cheapest ones of the rings
from the first ring cover candidate.

9. (currently amended) The processor-implemented method of claim 2, where
~~wherein~~ the at least one report includes characteristics of each of the rings included in the
ring cover candidate.

10. (currently amended) The processor-implemented method of claim 9, where
~~wherein~~ the characteristics of each of the rings include a ring identifier, a number of
nodes covered by a corresponding one of the rings, and a length of the corresponding one
of the rings.

11. (currently amended) The processor-implemented method of claim 2, where
~~wherein~~ the at least one report includes information about network spans not covered by
any valid ones of the rings of the ring cover candidate.

12. (currently amended) The processor-implemented method of claim 2, where
~~wherein~~ the at least one report includes information about network spans not covered by
any ones of the rings of the ring cover candidate.

13. (currently amended) The processor-implemented method of claim 2, where
~~wherein~~:

~~the generating the ring cover candidate includes generating a plurality of ring
cover candidates, and~~

the at least one report provides characteristics of each of the plurality of ring
cover candidates.

14. (currently amended) The processor-implemented method of claim 1, where
~~wherein~~:

~~the generating the ring cover candidate includes generating a plurality of ring
cover candidates, and~~

the method further comprises:
comparing the plurality of the ring cover candidates; and
selecting one of the plurality of ring cover candidates as a recommended ring
cover candidate.

15. (currently amended) The processor-implemented method of claim 14, where
~~wherein~~ the selecting one of the ring cover candidates comprises selecting one of the ring
cover candidates having a highest number of loaded spans.

16. (currently amended) An apparatus for generating at least one ring cover candidate for a network, comprising:

at least one storage device ~~configured~~ to store instructions; and

at least one processor ~~configured~~ to execute the instructions to generate a plurality of the at least one ring cover candidates ~~candidate~~ based on configuration information and traffic demand information associated with the network, where the at least one processor generates the plurality of ring cover candidates using a different set of parameters to generate each of the ring cover candidates.

17. (currently amended) The apparatus of claim 16, where ~~wherein~~ the at least one processor is ~~configured~~ to generate a report describing characteristics of the at least one ring cover candidate.

18. (currently amended) The apparatus of claim 16, where ~~wherein~~ the at least one processor is ~~configured~~ to generate a plurality of rings for each of the plurality of the at least one ring cover candidates ~~candidate~~, the plurality of rings including a plurality of fundamental rings, a plurality of second degree rings, and a plurality of third degree rings.

19. (currently amended) The apparatus of claim 16, where ~~wherein~~ the at least one processor is further ~~configured~~ to store each of the rings of the plurality of the at least

~~one~~ ring cover candidates ~~candidate~~ in span linked lists associated with ones of a plurality of network spans of the network covered by the rings in the at least one storage device.

20. (canceled)

21. (currently amended) The apparatus of claim 16, where, when generating the plurality of ring cover candidates, ~~wherein~~ the at least one processor is ~~further~~ configured:

to generate a first ring cover candidate by using shortest ones of the rings formed on loaded network spans,

to generate a second ring cover candidate by using shortest ones of the rings formed on a maximum number of uncovered network spans, and

to generate a third ring cover candidate by using shortest ones of the rings from the first ring cover candidate.

22. (currently amended) The apparatus of claim 16, where ~~wherein~~ the at least one processor is further ~~configured~~ to rank each of a plurality of rings included in the plurality of the at least one ring cover candidates ~~candidate~~, the rank being based on a measure of a benefit of including a respective ring in the plurality of the at least one ring cover candidates ~~candidate~~ versus a measure of a cost of including the respective ring in the plurality of the at least one ring cover candidates ~~candidate~~.

23. (currently amended) A system for identifying at least one ring cover candidate for a network, comprising:

- means for receiving network configuration information and information representing predicted traffic demand for the network;
- means for generating a plurality of ring cover candidates using a different process to generate each of the ring cover candidates, including a plurality of rings, based on the network configuration information and the information representing predicted traffic demand, each of the ring cover candidates including a plurality of rings, and each of the rings including a plurality of network spans; and
- means for comparing the ring cover candidates and selecting one of the ring cover candidates as a recommended ring cover candidate.

24. (currently amended) A computer-readable memory device ~~machine-readable medium~~ having recorded thereon instructions for at least one processor, the instructions comprising instructions for the at least one processor to perform a method, the method comprising:

- ~~to generate~~ generating a plurality of ring cover candidates for a network by using a different procedure to select a respective plurality of rings for each of the ring cover candidates, the generation of the ring cover candidates being based on configuration information and information representing predicted traffic demand associated with the network, each of the rings including a plurality of network spans; and

~~to compare~~ comparing the ring cover candidates and select one of the ring cover candidates as a recommended ring cover candidate based on the predicted traffic demand of network spans covered by each of the ring cover candidates.

25. (currently amended) The computer-readable memory device ~~machine-readable medium~~ of claim 24, ~~wherein~~ where the method further comprises ~~machine-readable medium further includes instructions for the at least one processor:~~

~~to create~~ creating a spanning tree based on loaded ones of the network spans,

~~to generate~~ generating a plurality of fundamental rings based on the spanning tree, and

~~to generate~~ generating a plurality of rings based on the generated fundamental rings.

26. (currently amended) The computer-readable memory device ~~machine-readable medium~~ of claim 25, ~~wherein~~ where the plurality of rings based on the generated fundamental rings include at least one of second degree rings and third degree rings.

27. (currently amended) The computer-readable memory device ~~machine-readable medium~~ of claim 25, ~~wherein~~ where the method further comprises: ~~machine-readable medium further includes instructions for the at least one processor~~

~~to attempt~~ attempting to create a focused third degree ring to cover a network span when the network span is covered only by an invalid fundamental ring.

28. (currently amended) The computer-readable memory device ~~machine-readable medium~~ of claim 25, ~~where~~ wherein:

the plurality of rings based on the generated fundamental rings are formed by combining a fundamental ring with another of the rings, and

the fundamental ring and the another of the rings have a network span in common.

29. (currently amended) The computer-readable memory device ~~machine-readable medium~~ of claim 24, ~~wherein~~ where the method further comprises: ~~machine-readable medium further includes instructions for the at least one processor~~

~~to calculate~~ calculating a ranking of each of the rings in at least one of the ring cover candidates, the ranking being based on a benefit gained by including a respective ring in the at least one ring cover candidate versus a measure of a cost incurred by including the respective ring in the at least one ring cover candidate.

30. (currently amended) The computer-readable memory device ~~machine-readable medium~~ of claim 24, ~~wherein~~ where the method further comprises: ~~machine-readable medium further includes instructions for the at least one processor~~

~~to generate~~ generating at least one report that describes characteristics of at least one of the ring cover candidates.